CONSTRUCTION PLANS
REQUIREMENTS

The construction plans should contain the following information:

1. Title Sheet.

    a. Name of project, county(s), state, etc.
    b. Board of Directors or Public Officials.
    c. Acceptance of project plans by owner and USDA Rural Development.
    d. Seal of Engineer with signature and date.
    e. Date of latest revision.

2. Key Map.

    a. Include a key map of the project showing the roads, towns, communities, water lines, storage tanks, pumping stations, wells, etc. If the area to be served is shown on two or more sheets, the key map supplied should show by sheet number the area covered by the various sheets.
    b. General notes to the contractor.
    c. Legend.

3. Pipeline Construction Plans.

    a. Scales should be approximately 1 inch to 200 feet, to 1 inch to 400 feet. Larger scales should be used where needed.
    b. Maps should be approximately 24 inches by 36 inches in size. Smaller sizing legible maps are also acceptable.
    c. North arrow and scale should be shown on each sheet and arranged so that North is pointed to the top of the sheet.
    d. The plan map should include location of the pipeline, meters, sewer service taps, water source, pumping plants, storage facilities, easements, roads, fences, culverts, other pipelines, underground cables, creeks or rivers, bridges, names of roads or highway numbers, and construction hazards.
    e. The customer's name, location and elevations.
    f. The location of in-line pressure reducing valves and outlet pressure setting.
    g. Highway crossing, length, size, and type of encasement.
    h. Location and size of all proposed pipelines, valves, markers, etc.
    i. Use enlarged "insets" to show location of valves, line junctions, or other special appurtenances.
    j. Elevations should be shown at the wells, plants, storage facilities, pressure regulators, intersections, changes in pipe sizes, ends of lines, junctions of laterals, and high and low parts of the line.

k. A system of grid plan mapping should be used and strip mapping avoided on rural water systems.

4. Construction Detail Plans. These plans should include:

   a. Plant layout showing:

      (1) Plat of the site with orientation, topography, dimensions, drainage, existing easements (power, gas, etc), piping and valve arrangement, buildings, wells, storage tank, fences, gates, master meters, floor drain outlets, etc.
      (2) Flow through diagrams of the plant.
      (3) Construction details of all structures such as foundations, retainer rings, splash blocks, drainage, roads, buildings, piping, electrical, heating, sanitary structures, storage tanks, water treatment facilities, wells, backwash pits, building ventilation and pressure tanks.

   b. Plan views and individual details of storage tank or elevated tank. The supply line to the storage tank should discharge above high water. The storage tank should be set on a layer of clean gravel. A retainer ring should be installed around the ground storage tank approximately 2 feet larger than the diameter of the tank. Reinforced concrete foundations will be needed for standpipes and elevated tanks. Where a well is discharging into the tank, show the location of the electrode on/off and emergency off settings.

   c. The spacing and size of reinforced steel in concrete footing, foundations, and walls.

   d. Elevation and plan views of buildings and plant piping orientated with respect to plant layout.

   e. Include other details, drawings, specifications and dimensions adequate for construction.

5. Standard Detail Sheet. Include all dimensions, sizes, specifications, and details as needed. The standard detail sheet should include details for:

   a. Blow-off valve.
   b. Regulator valve and meter installation.
   c. Creek or river crossings.
   d. Railroad, road and highway crossings.
   e. Pipe installation and bedding.
   f. Standard valve installation for various types of pipe material by pipe and valve size.

g. Air relief valves or vents. These should be located in right-of-way fence lines, or other protected location in non-traffic areas.
h. Flush valves – discharge should be 18 inches above ground and located in fence lines or on right-of-way.
i. Service tap for various types of materials.
j. Meter or valve vaults, boxes, etc.
k. Concrete thrust blocks.
l. Fire hydrant.
m. Standard service loop and meter.
n. Chain link or other fencing.
o. Pipeline and valve markers.
p. Short and long-side service wye.
q. Manhole details.
r. Clean out details.
s. Cathodic protection, if other means of corrosion protection are not specified.

6. All plan sheets shall bear the seal and signature of the designing engineer and date of execution.

7. Environmental Mitigation. Mitigation requirements as stated in the approved environmental report and the letter of conditions shall be incorporated by the engineer in the contract documents, plans and specifications.

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